

10/762,425

2

81095031

In the claims:

13. (Currently Amended) A vehicle control system comprising:

an IMU sensor cluster comprising at least three angular rate sensors and at least three linear acceleration sensors, said sensor cluster generating vehicle dynamic signals including a roll rate signal, a yaw rate signal, a pitch rate signal, a longitudinal acceleration signal, a lateral acceleration signal, and a vertical acceleration signal; and

an integrated controller comprising a plurality of processing units, said integrated controller receiving said vehicle dynamic signals, said integrated controller generating a vehicle frame signal as a function of said vehicle dynamic signals, said integrated controller generating a dynamic control signal in response to said vehicle frame signal and controlling a vehicle in response to said dynamic control signal.

14. (Currently Amended) The system as in claim 13, wherein said controller generates an estimate of vehicle operation states and ~~[[said]]~~ a prediction of vehicle operation states that include at least one of vehicle global and relative attitudes, vehicle directional velocities, and forces and torques applied to a vehicle.

18. (Currently Amended) The system as in claim 13, wherein said controller further generates wheel speed alignment (wsa), road constraint alignment (rca), level ground attitude alignment (lgaa), or virtual heading angle alignment (vhaa) ~~wsa, rca, lgaa or vhaa~~ alignment conditions.